Warmup! (yesterday's 3rd example not enough time)

The sides and classification of a triangle given below. The length of the longest side is the integer given. What value(s) of x make the triangle?

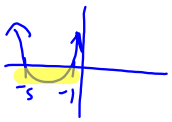
x+2, x+4, $\sqrt{10}$; obtuse

$(\sqrt{10})^2 > (x+2)^2 + (x+4)^2$

$0 > x^2 + 6x + 5$

$(x+5)(x+1)$

$x = -5 \quad x = -1$



$-5 < x < -1$

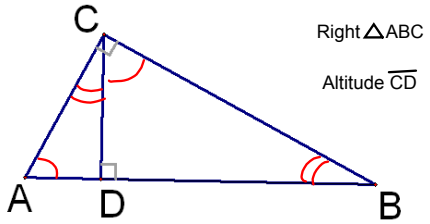
$-1.4 < x < -1$

$2x+6 > \sqrt{10}$

$x > -1.4$

7-3 Use Similar Right Triangles
(Geometric Mean)

$\frac{10}{x} = \frac{20}{x}$



Right △ABC

Altitude $\overline{CD}$

What are the similar triangles?

$\triangle ACB \sim \triangle ADC \sim \triangle CDB$

$\frac{AC}{AD} = \frac{CB}{DC} = \frac{AB}{AC}$ $\frac{AD}{CD} = \frac{DC}{DB} = \frac{AC}{CB}$

$\frac{AC}{CD} = \frac{CB}{DB} = \frac{AB}{CB}$

G. Means

AC
CD
CB

Theorem 7-5--If the altitude is drawn to the hypotenuse of a right triangle, then the 2 triangles formed are similar to each other and the original triangle.

Geometric Mean (review)

$\frac{r}{s} = \frac{s}{t}$ s is the geometric mean

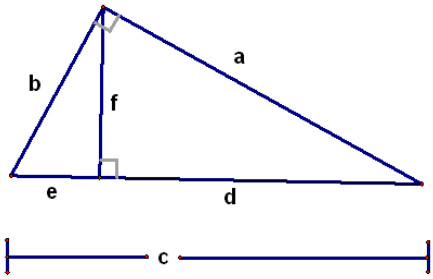
Find the geometric mean between 3 and 8.

Find the geometric mean between 9 and 14.

Ratios from the triangle. Do you see any g. means?

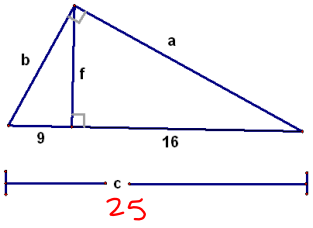
Theorem 7.6--Geometric Mean (altitude) Theorem---In a right triangle, ...the altitude is the geometric mean b/w segments of hypotenuse

Theorem 7.7-Geometric Mean (leg) Theorem---In a right triangle,....each leg is the geometric mean b/w the hypotenuse and the segment of the hypotenuse that is adjacent to the leg.



$\frac{e}{f} = \frac{f}{d}$ $\frac{c}{b} = \frac{b}{e}$ $\frac{c}{a} = \frac{a}{d}$

Example 1



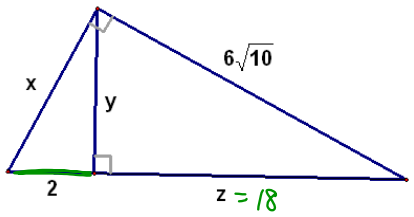
Find
a
b
c = 25
f = 12

$\frac{9}{f} = \frac{f}{16}$ $f^2 = 9 \cdot 16$ $f = 12$

$\frac{25}{a} = \frac{a}{16}$ $a^2 = 25 \cdot 16$ $a = 20$

$\frac{25}{b} = \frac{b}{9}$ $b^2 = 9 \cdot 25$ $b = 15$

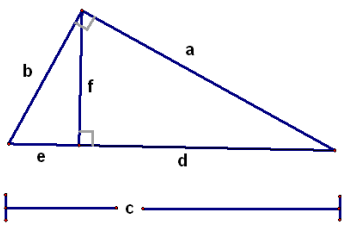
ex. 2



$\frac{2}{y} = \frac{y}{z}$ $\frac{2}{y} = \frac{y}{18}$ $y = 6$

$\frac{z}{6\sqrt{10}} = \frac{6\sqrt{10}}{(z+2)}$ $z^2 + 2z = 360$ $z^2 + 2z - 360 = 0$ $(z+20)(z-18) = 0$ $z \neq -20$ $z = 18$

$\frac{2}{x} = \frac{x}{20}$ $x = 2\sqrt{10}$



$\frac{e}{b} = \frac{b}{c}$ $b^2 = ec$

$\frac{d}{a} = \frac{a}{c}$ $a^2 = dc$

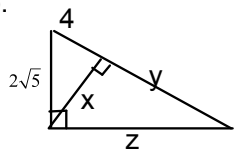
$a^2 + b^2 = dc + ec$

$c(d+e)$

$a^2 + b^2 = c \cdot c$

$= c^2$

Do:



HW
p454
13-18, 21-23, 27

Keep answers in
simplified radical form.